

SYNTHESIS, OPTICAL PROPERTIES AND CHEMOSENSORY ABILITY OF NOVEL PUSH-PULL IMIDAZOLE BEARING PHENANTHRENE MOIETY

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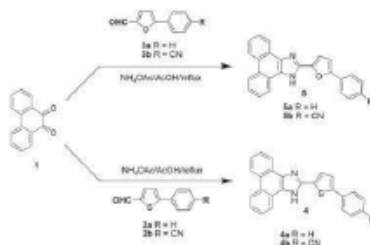
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A family of novel of push-pull fluorescent phenanthroimidazoles functionalized with (hetero)aryl and cyano (hetero)aryl substituents was synthesized in good to excellent yields (53-91 %) using a simple methodology and completely characterized. The novel phenanthroimidazoles derivatives 4-5 was evaluated as two-photon absorbing chromophores besides it used as chromo-fluorogenic chemosensors for ions which have environmental and medicinal interest. Interaction of receptors 4-5 with anions and cations in acetonitrile induced selective response for several anions (CN⁻, F⁻ and AcO⁻) besides Cu(II) cation. Furthermore, the recognition behaviour was explained by the involvement of the electron donor imidazole heteroatom. From the spectrophotometric titrations, receptor 5b was the most receptor for CN⁻ and F⁻ with limit of detection was determined as 2.3 and 5.9 μM respectively. Based on job's plot, the binding stoichiometry between the receptors and the anions and cations was found to be 1:2 (ligand to anion/metal cation). The UV-vis absorption and fluorescence spectroscopy revealed that the phenanthroimidazoles 4-5 exhibit high quantum fluorescence yields (0.92-0.95) in acetonitrile.



Scheme 1. Synthesis of phenanthroimidazoles 4a-b and 5a-b.

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